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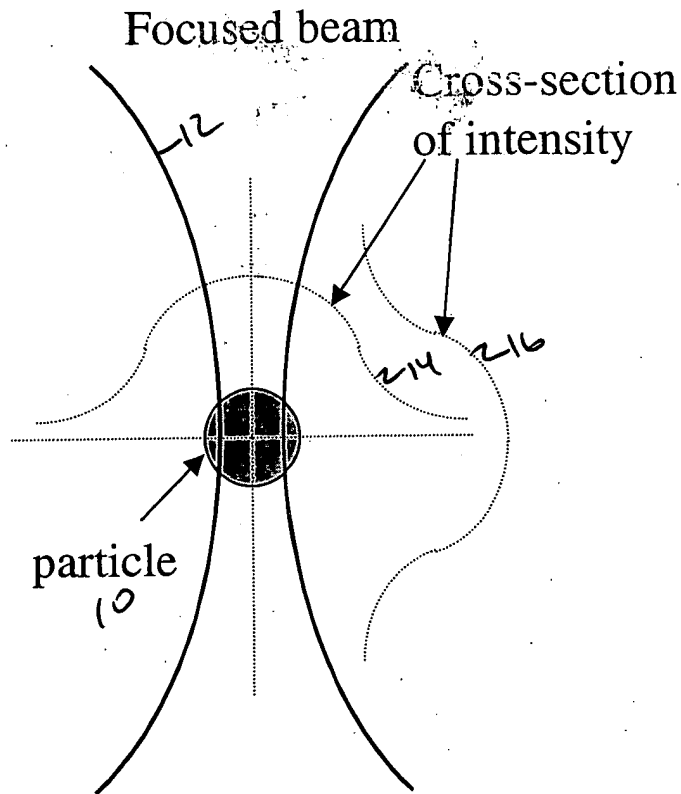
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$$F_{\nabla} = 2\pi \cdot r^3 \frac{\sqrt{\epsilon_B}}{c} \left(\frac{\epsilon - \epsilon_B}{\epsilon + 2\epsilon_B} \right) (\nabla \cdot I)$$

F_{∇} = optical force on particle towards higher intensity

r = radius of particle

ϵ_B = dielectric constant of background medium

ϵ = dielectric constant of particle

I = light intensity (W/cm^2)

∇ = spatial derivative

Fig. 1

Fig. 2

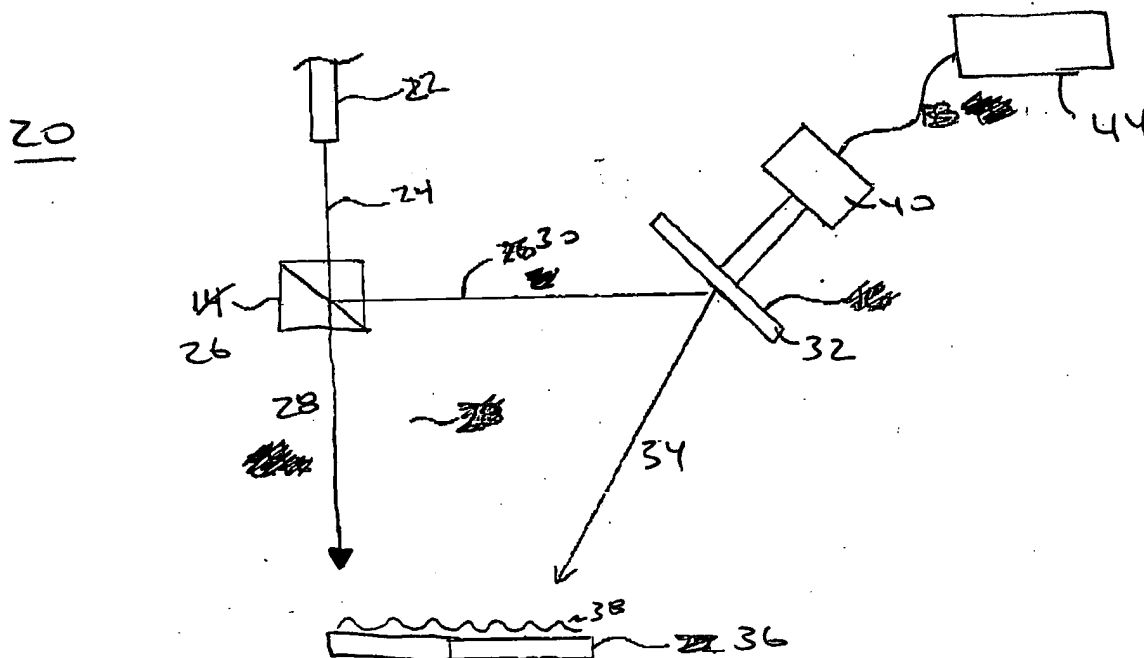


Fig. 3

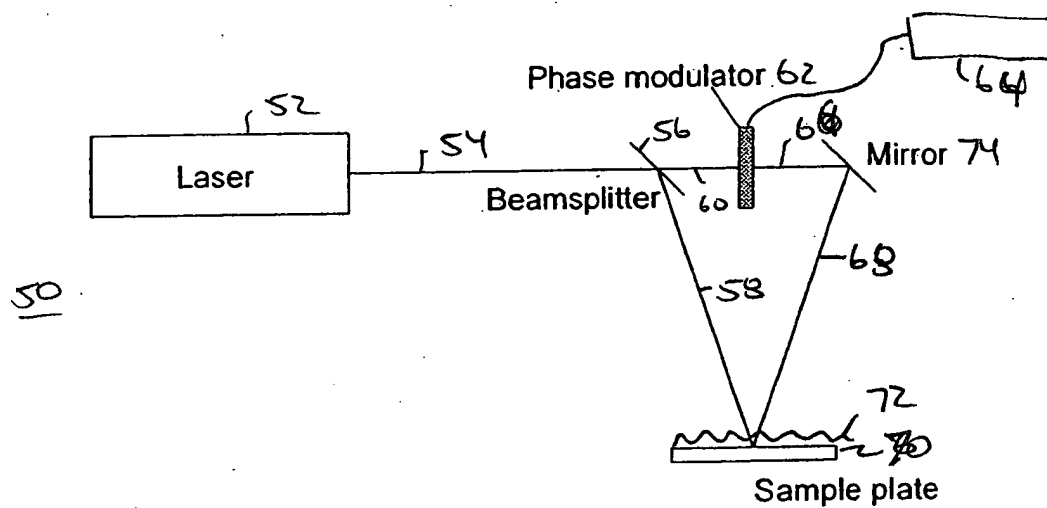
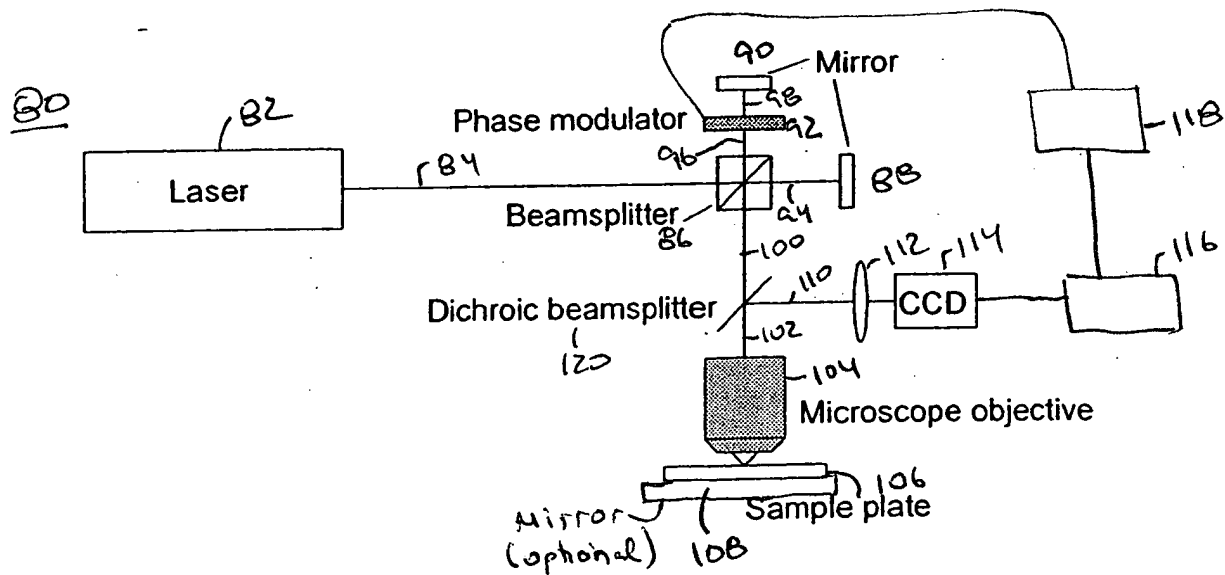


Fig. 4



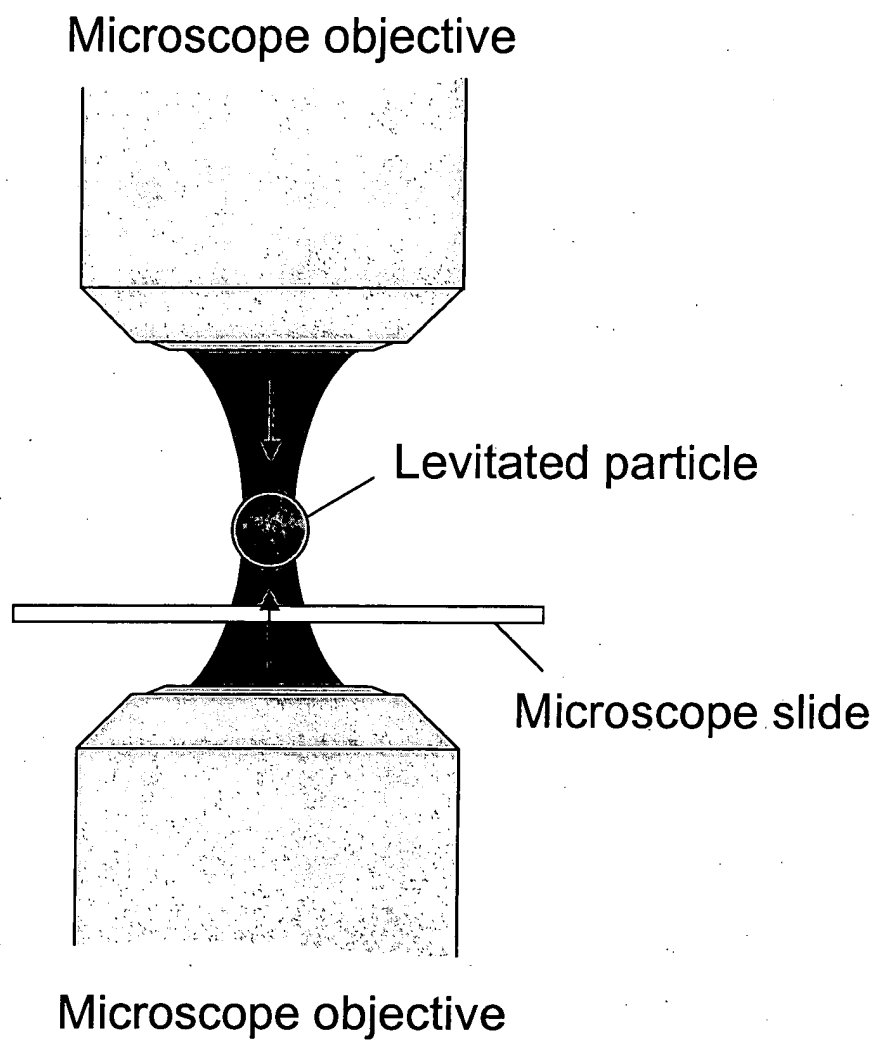


Fig. 4A

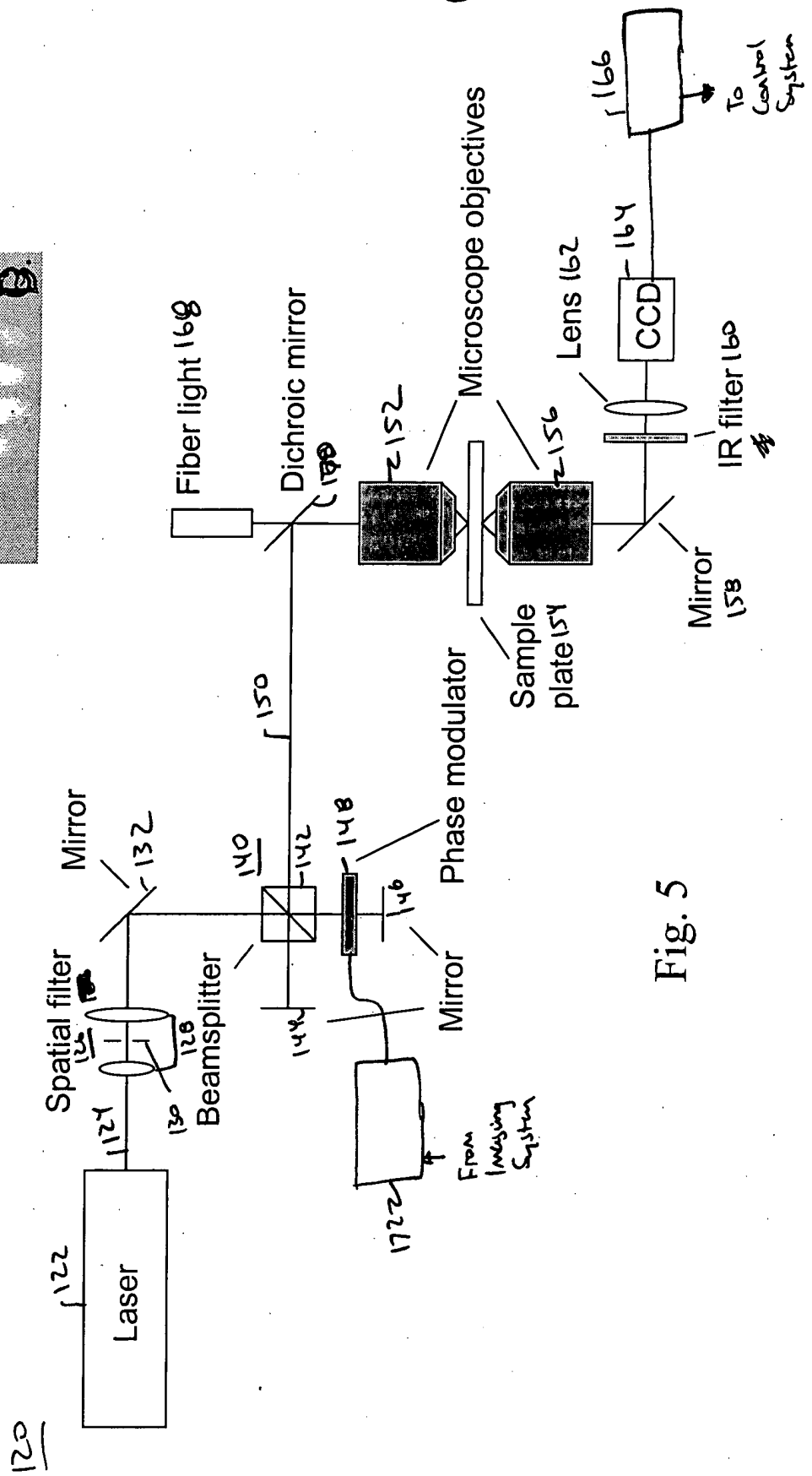
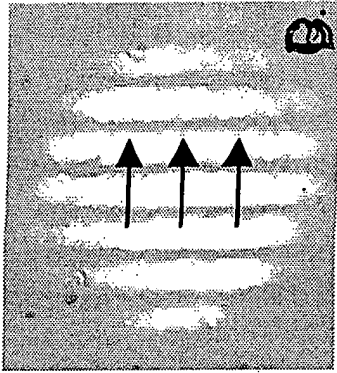
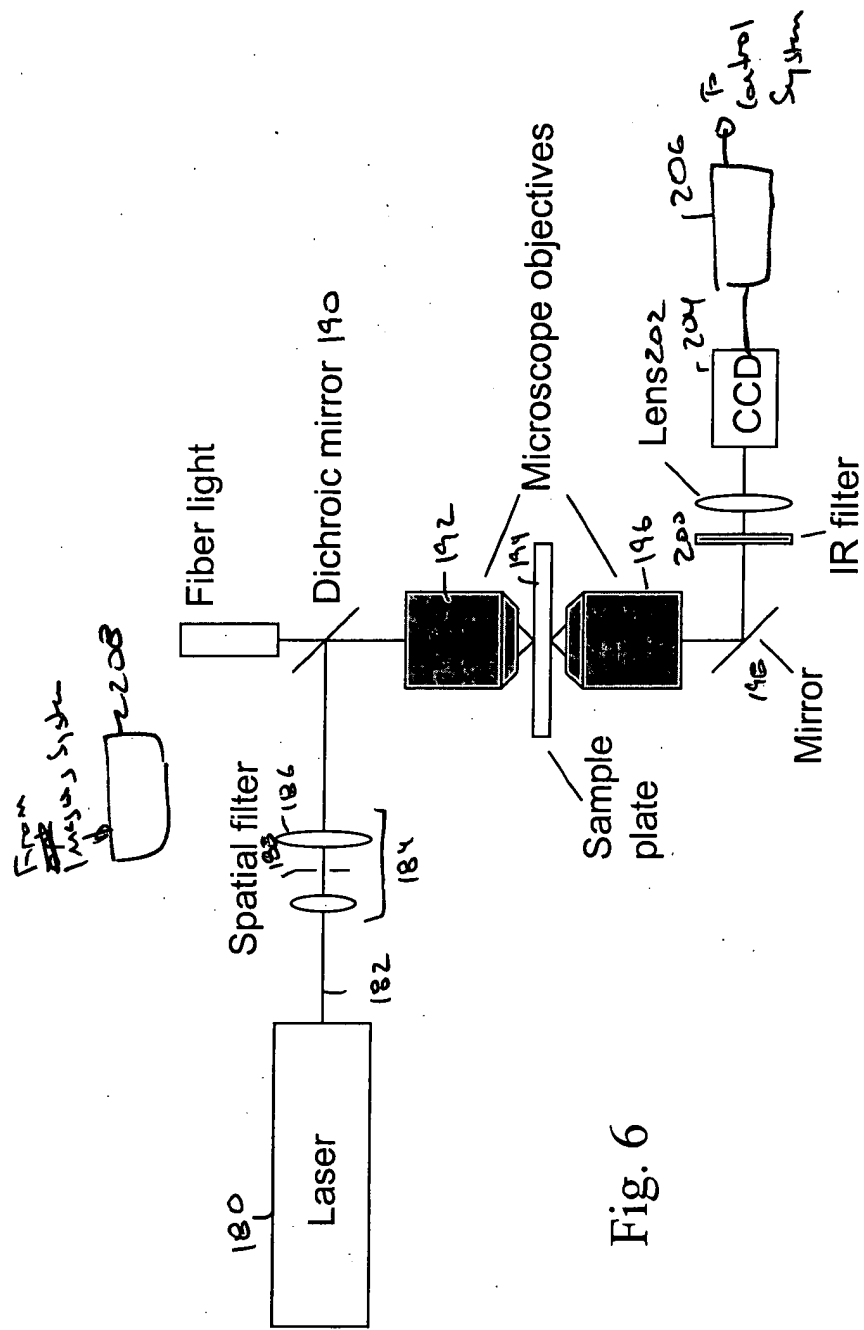


Fig. 5



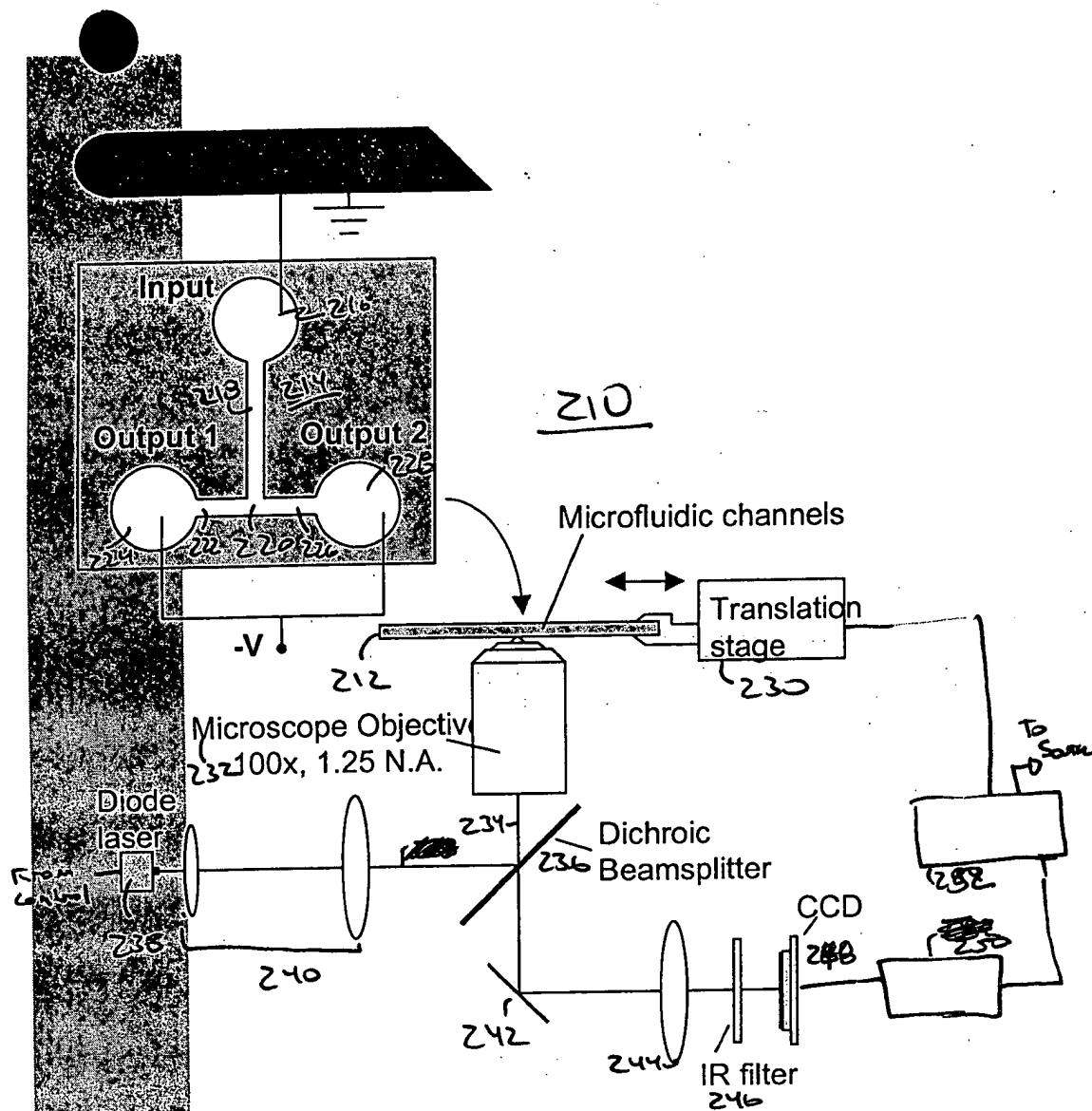


Fig. 7

FIG. 8 is a schematic diagram of a laser scanning system. The system includes a beam input 262, a polygonal mirror 272, a galvanometer or resonant scanner 264, a lens 274, and a scan area 260. The beam input 262 is directed towards the polygonal mirror 272. The polygonal mirror 272 is mounted on a rotating shaft 270. The beam is reflected by the mirror and passes through a lens 274. The lens 274 focuses the beam onto a scan area 260. The scan area 260 is defined by the beam's path as it scans across the surface. The galvanometer or resonant scanner 264 is used to control the rotation of the polygonal mirror 272.

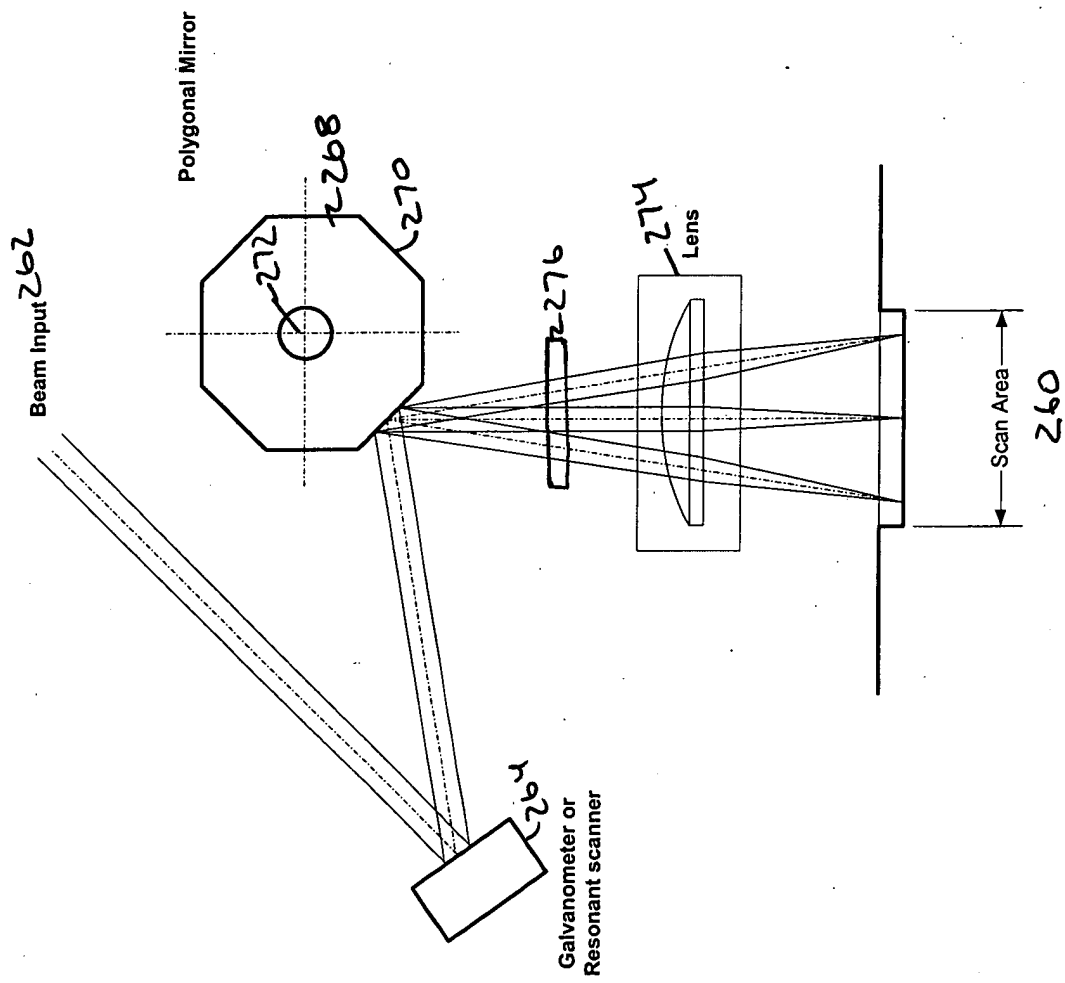


Fig. 8

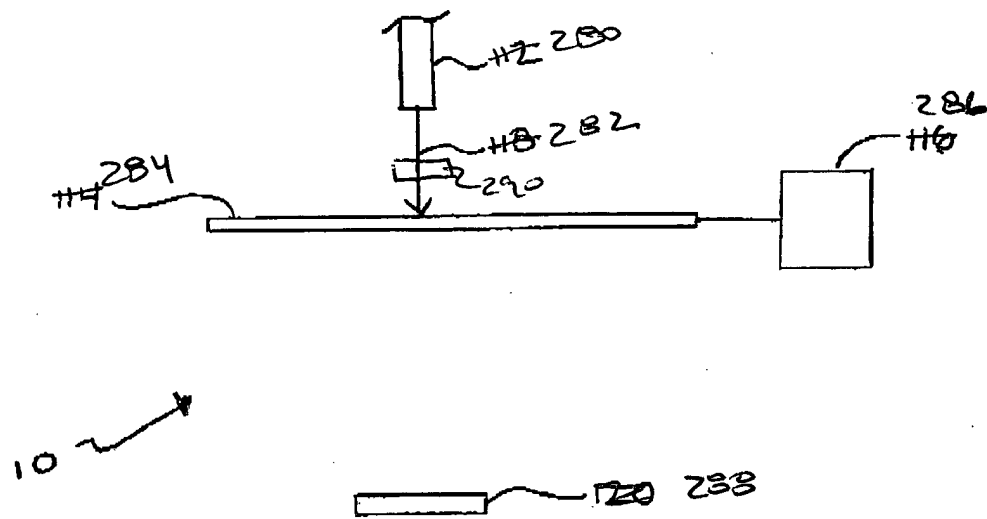


Fig. 9A

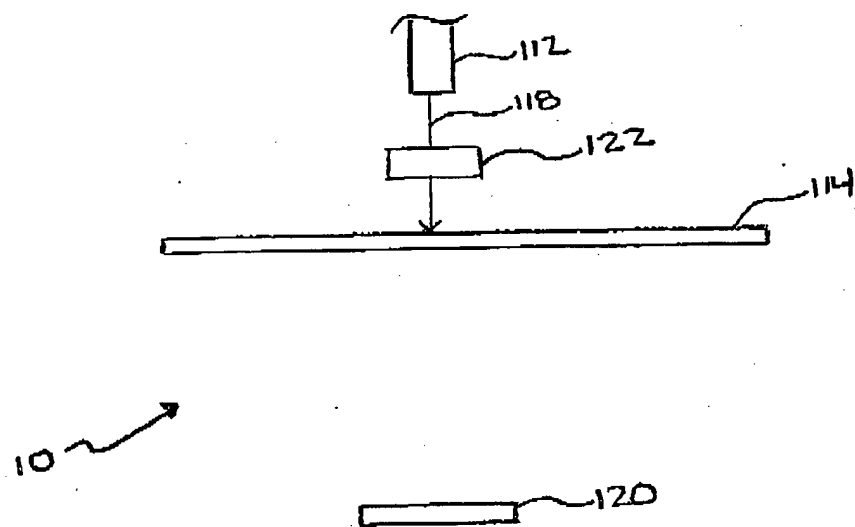


Fig. 9B

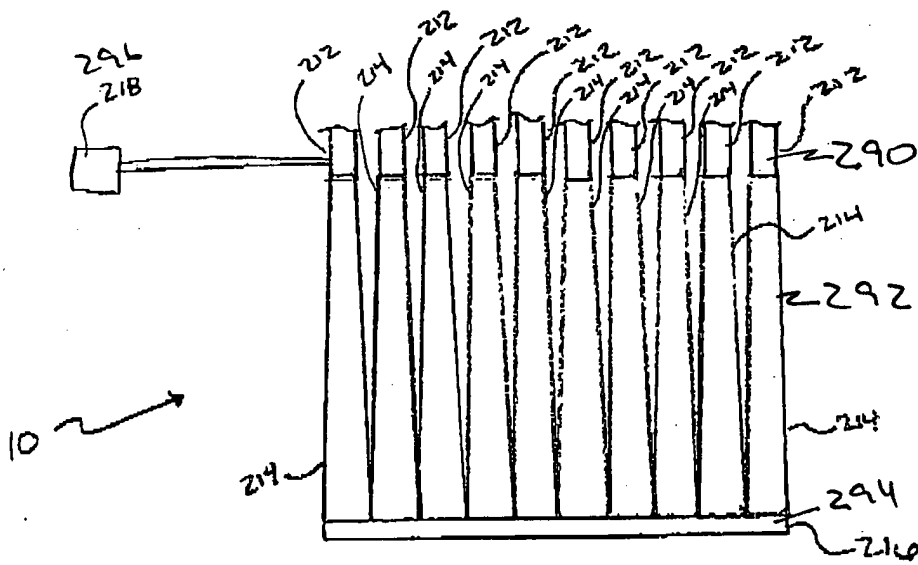


Fig. 10

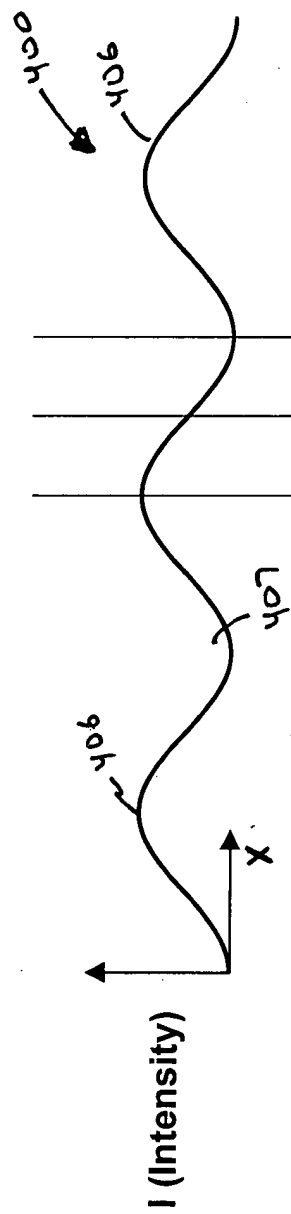


Fig. 11A

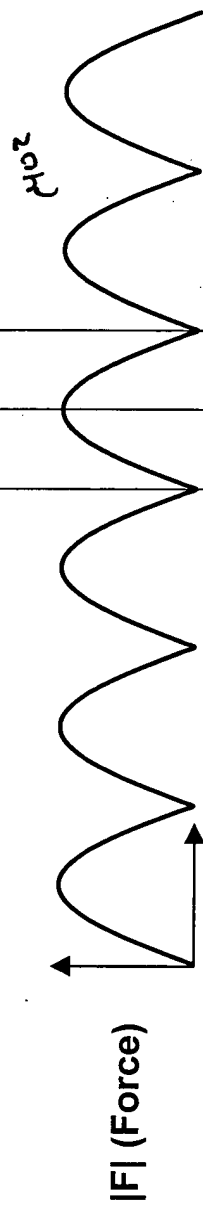


Fig. 11B

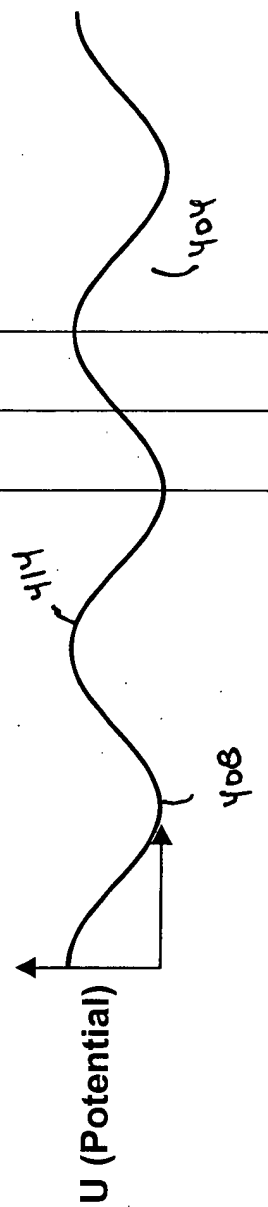


Fig. 11C

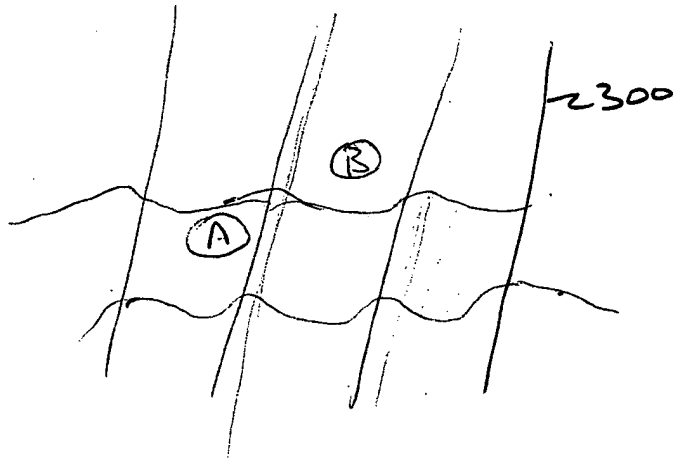


Fig. 12A

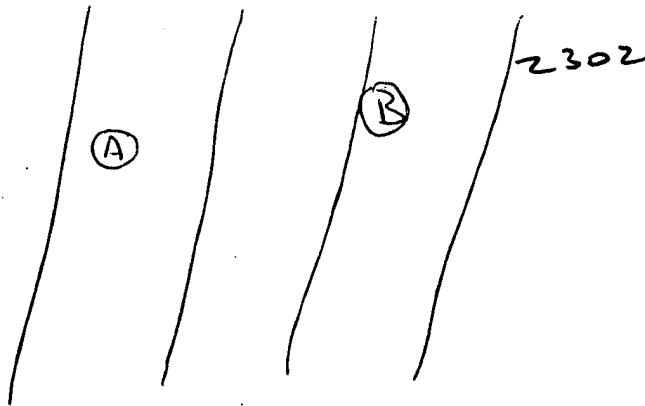


Fig. 12B

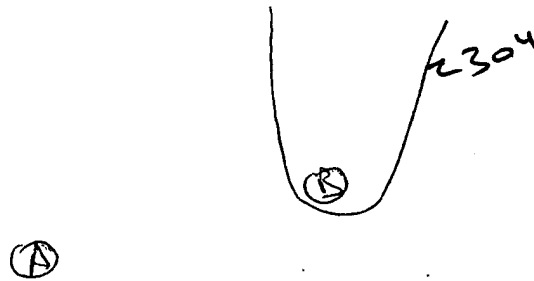


Fig. 12C

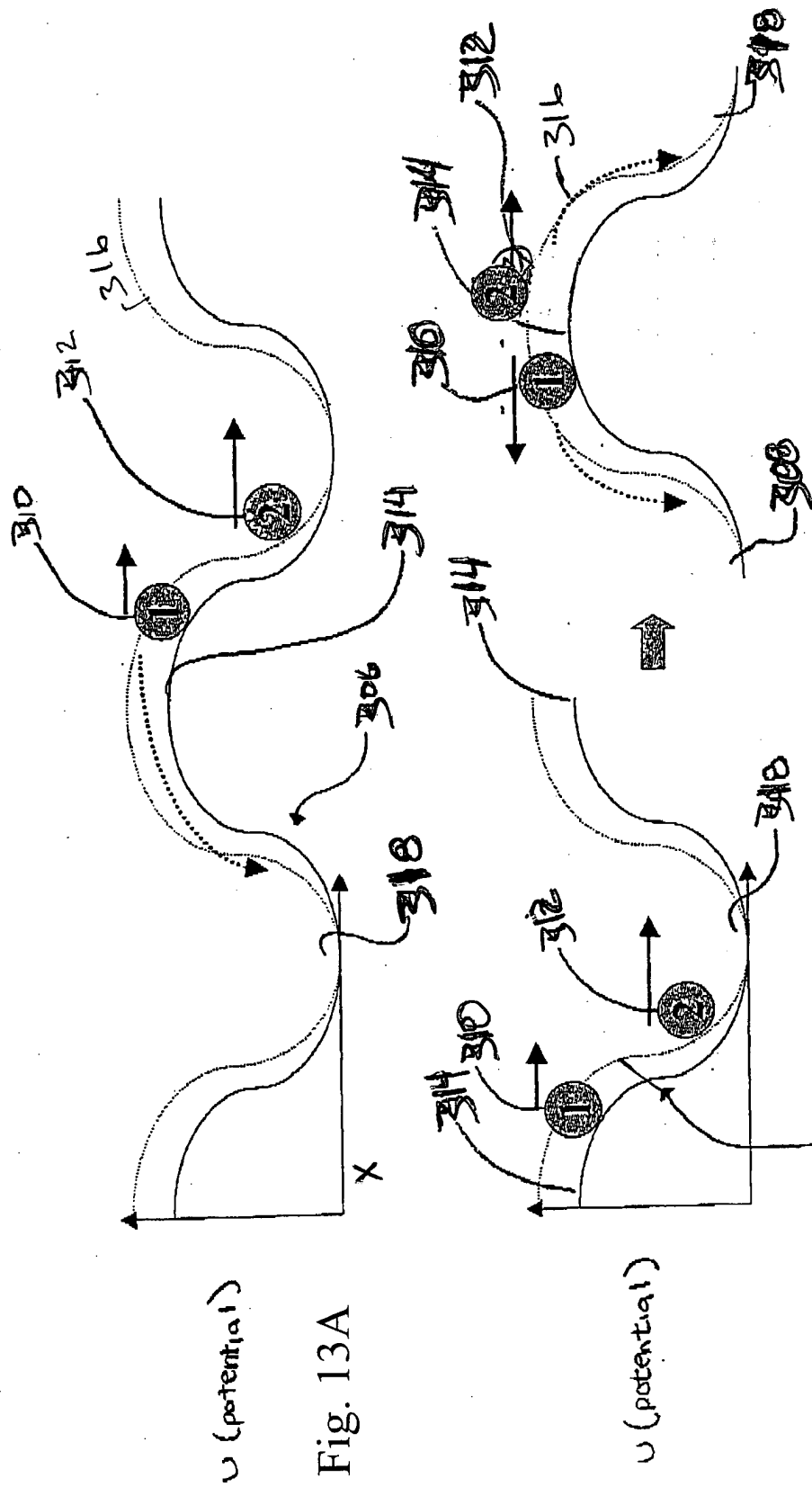


Fig. 13A

Fig. 13B

Fig. 13C

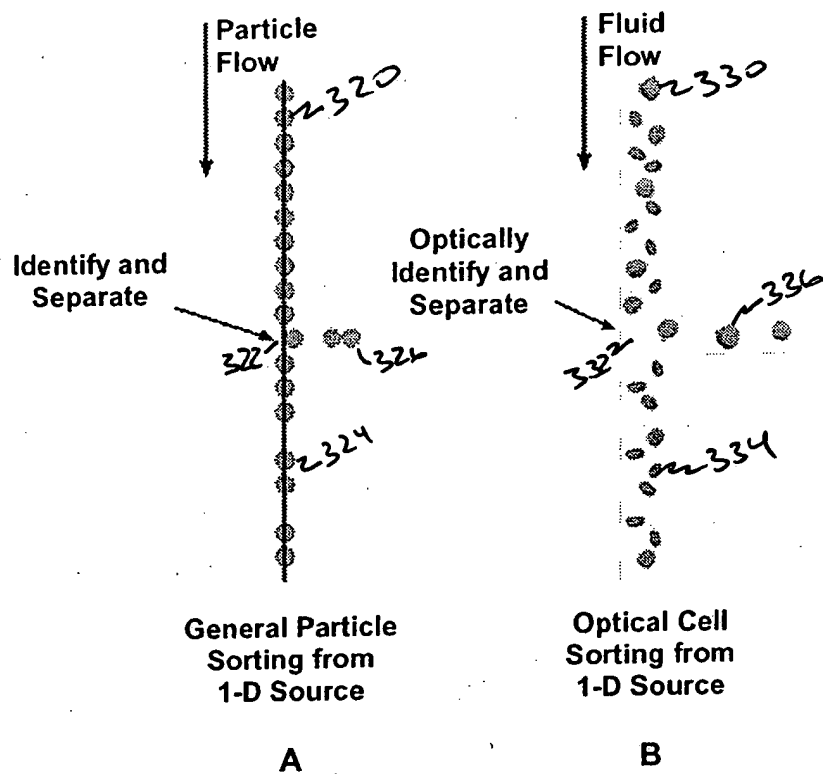


Fig. 14A

Fig. 14B

Sorting in a T-channel

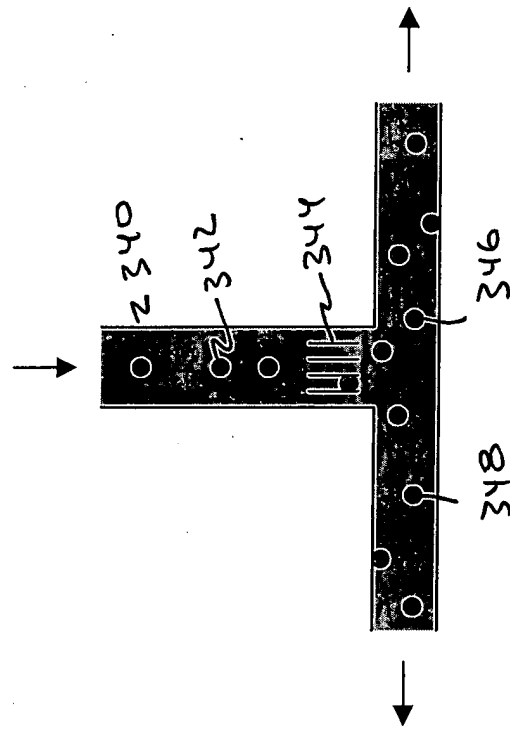


Fig. 15

Sorting in an H-channel

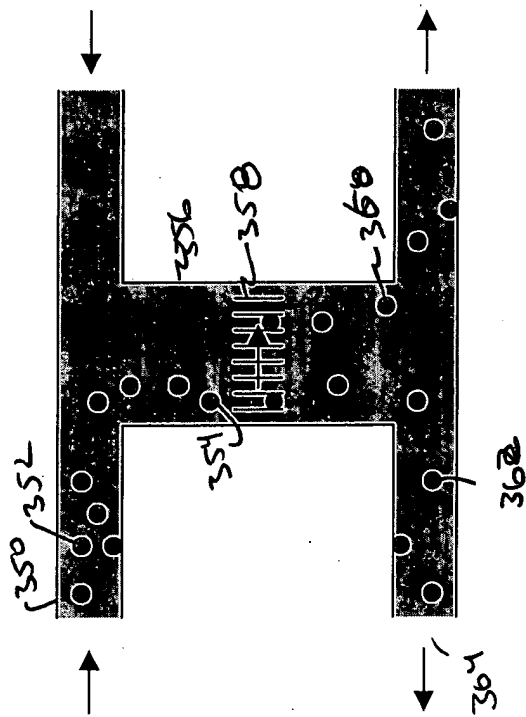


Fig. 16

Y-Channel

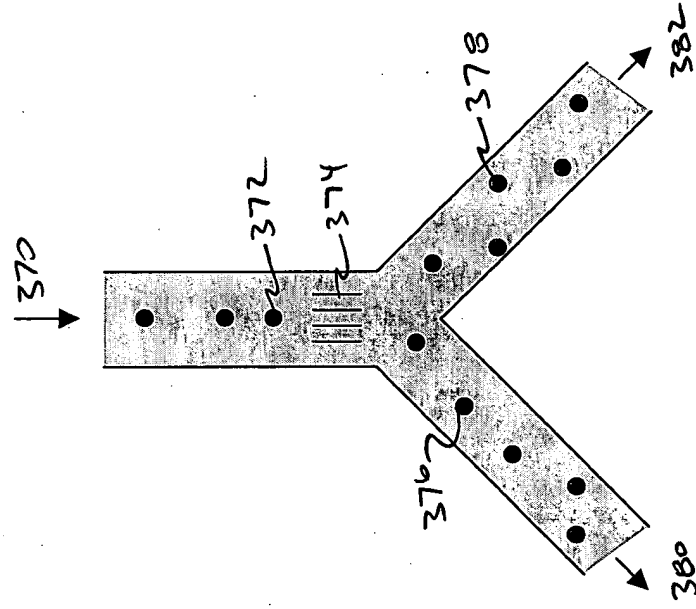


Fig. 17

X-Channel

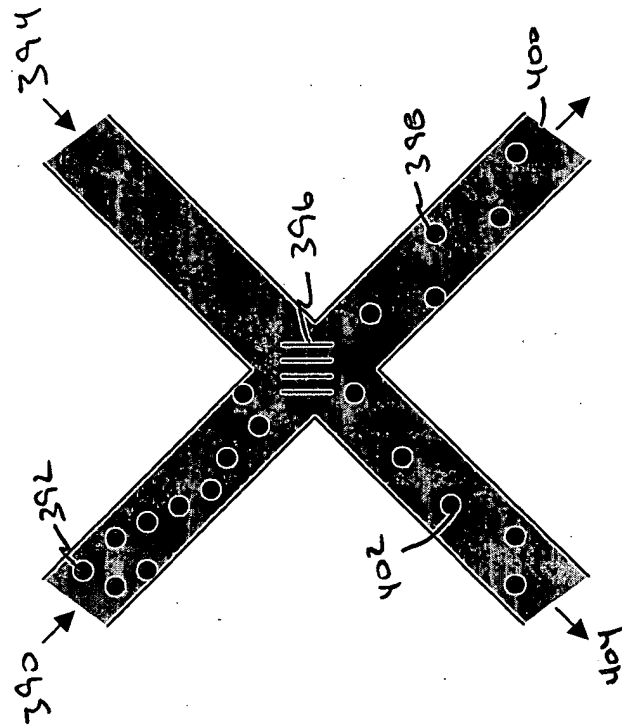


Fig. 18

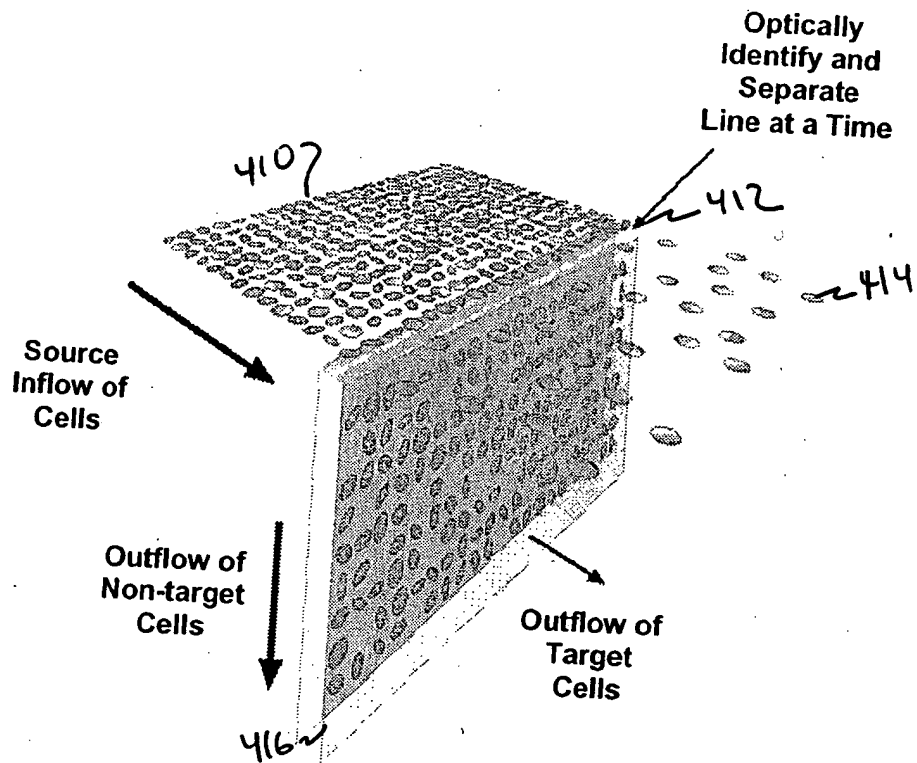


Fig. 19

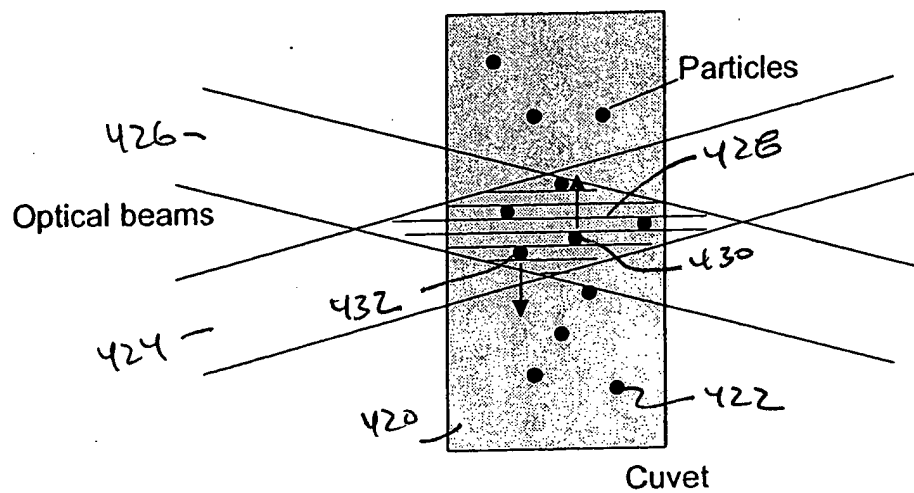


Fig. 20

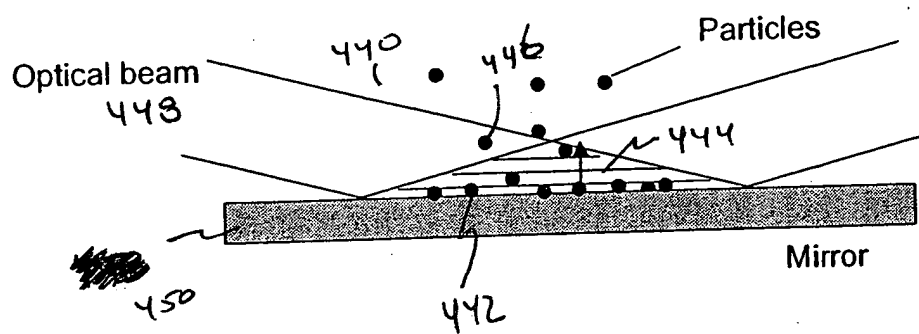


Fig. 21

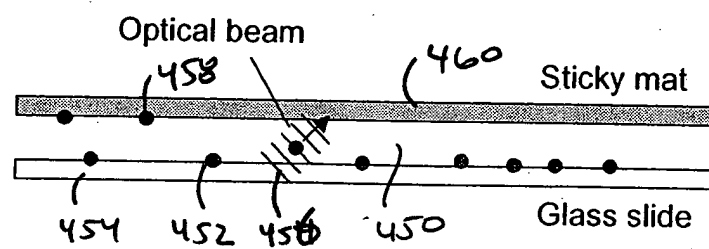
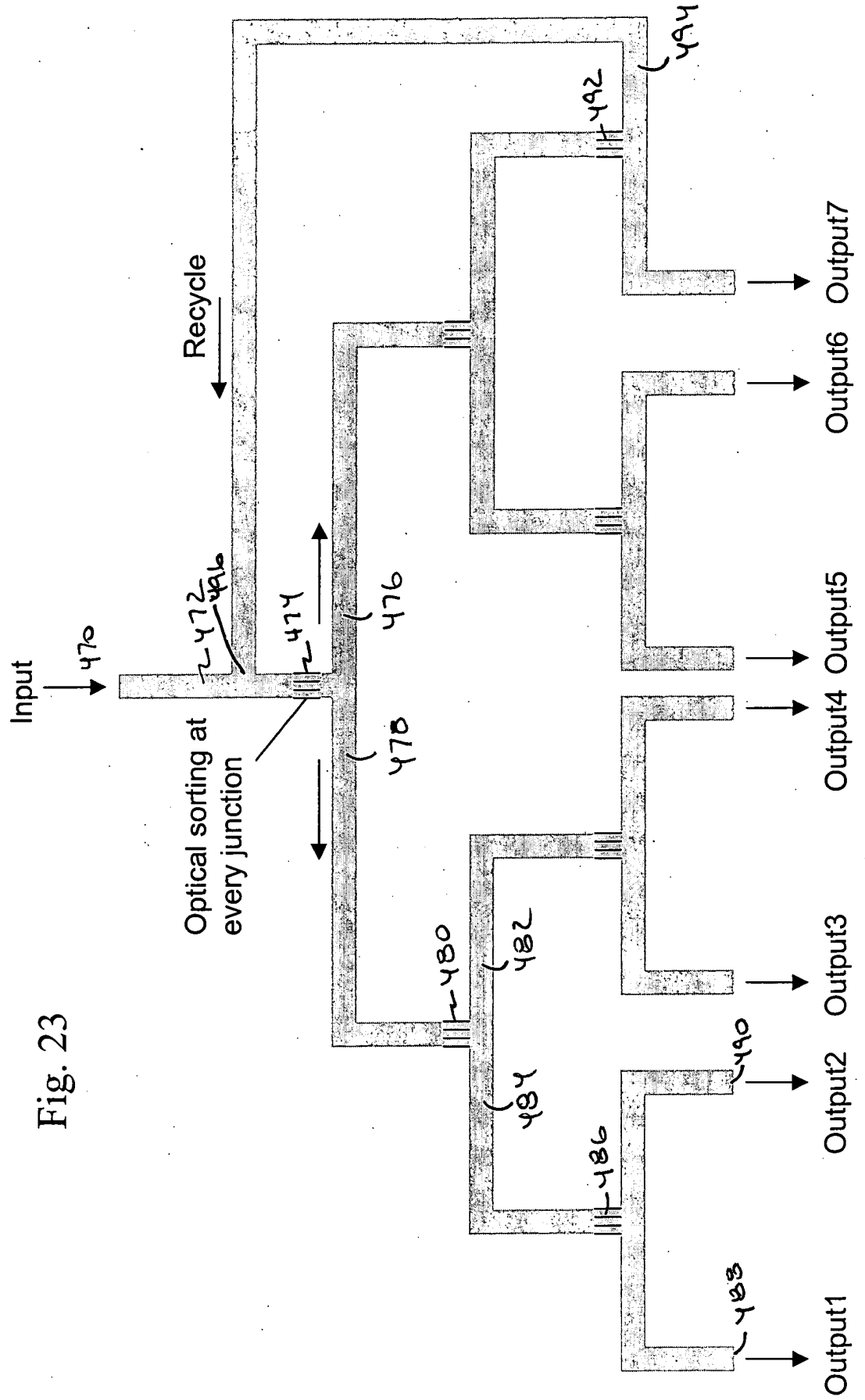


Fig. 22



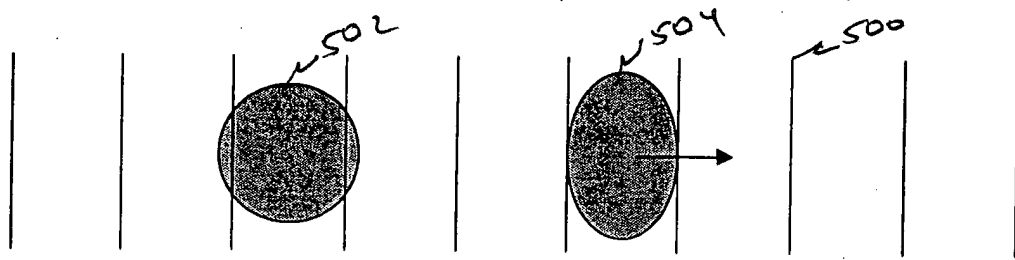


Fig. 24

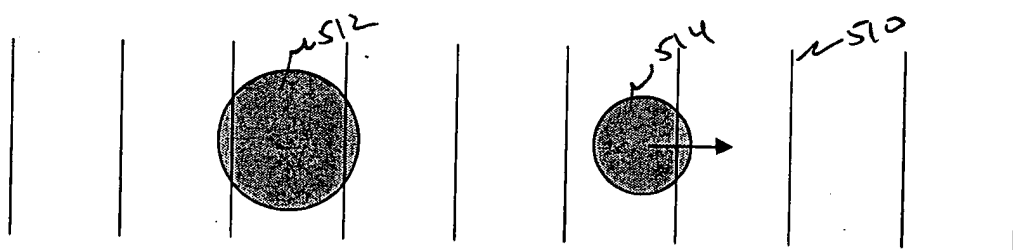
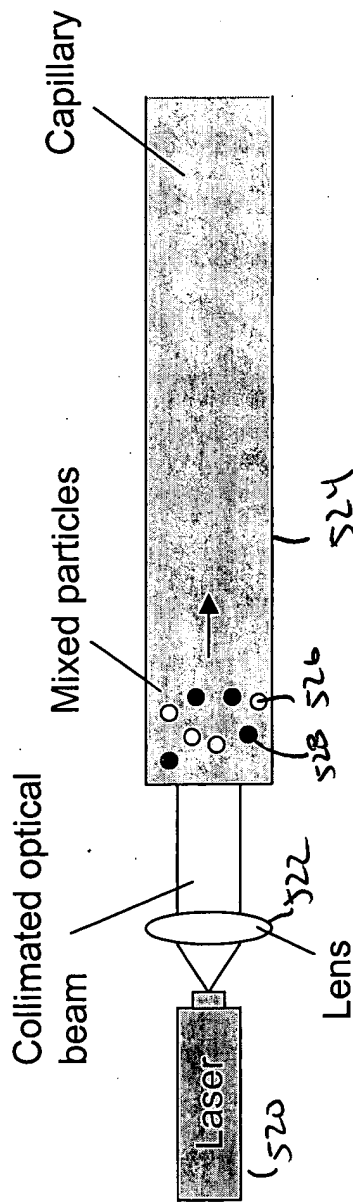


Fig. 25

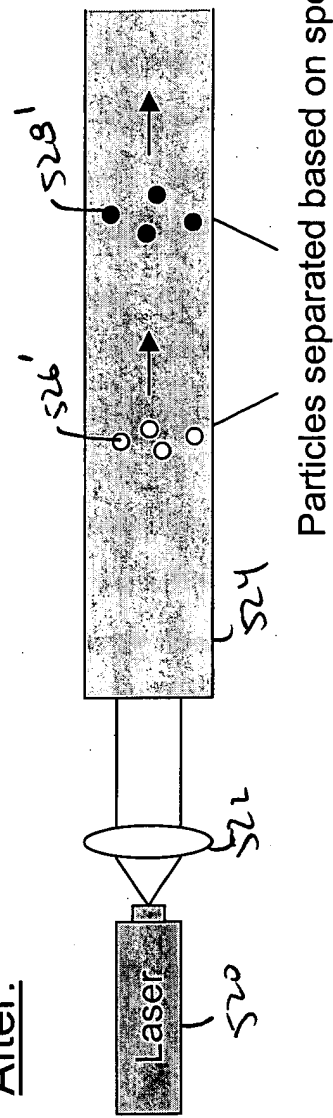
Scatter Force Separation

Fig. 26

Before:



After:



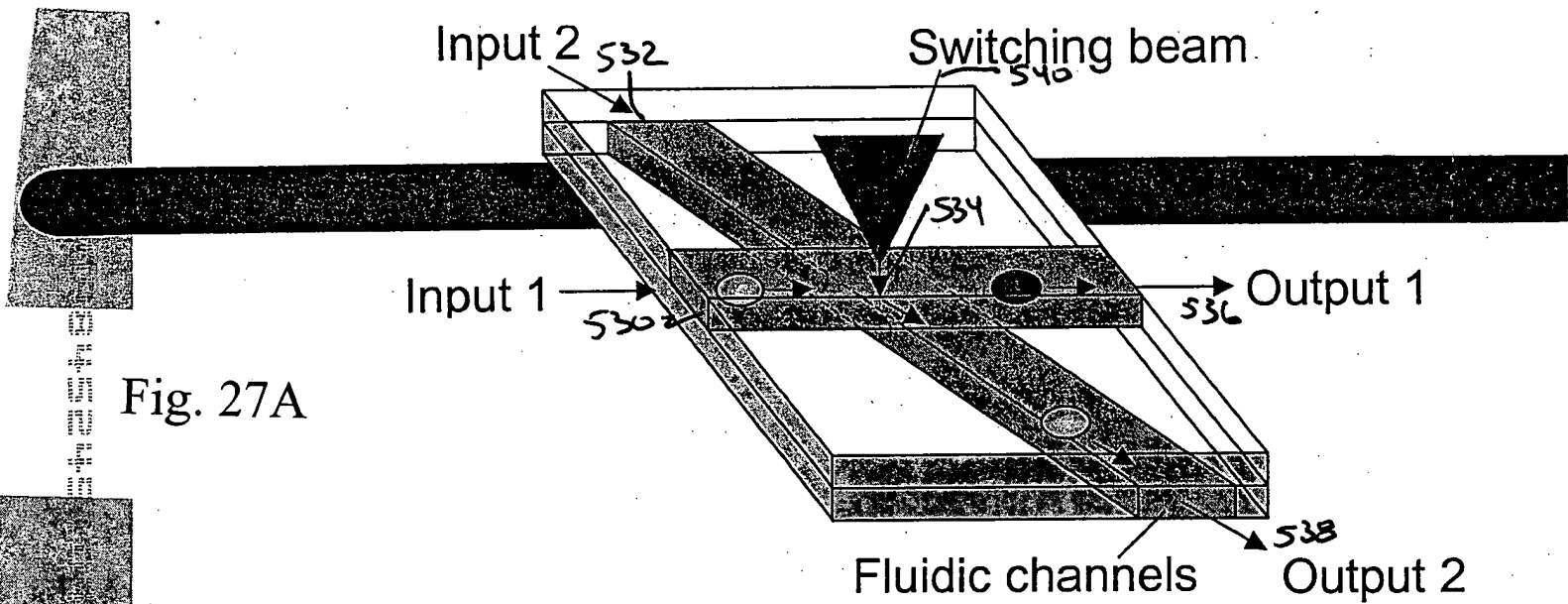


Fig. 27A

View from the side:

Optical beam off:

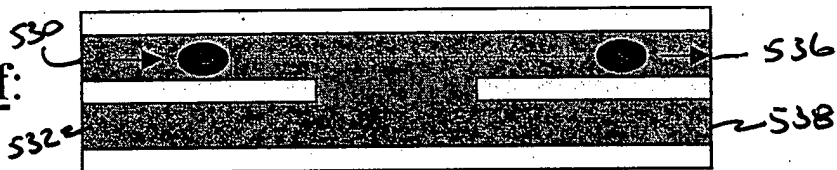


Fig. 27B

Optical beam on:

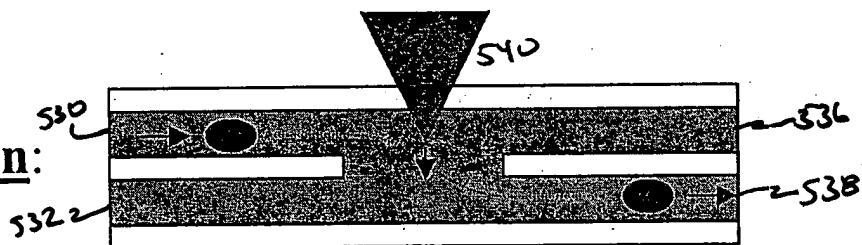


Fig. 27C

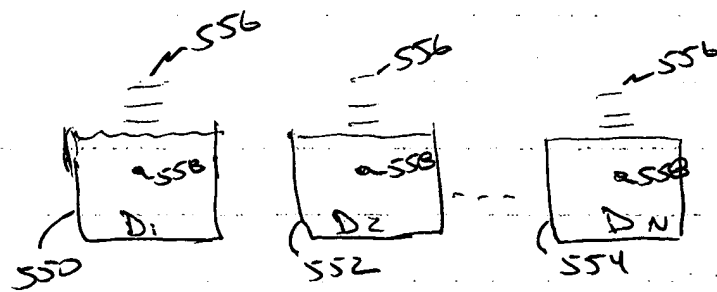


Fig. 28

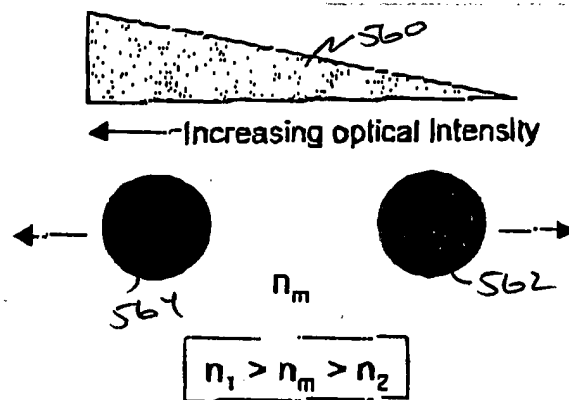


Fig. 29

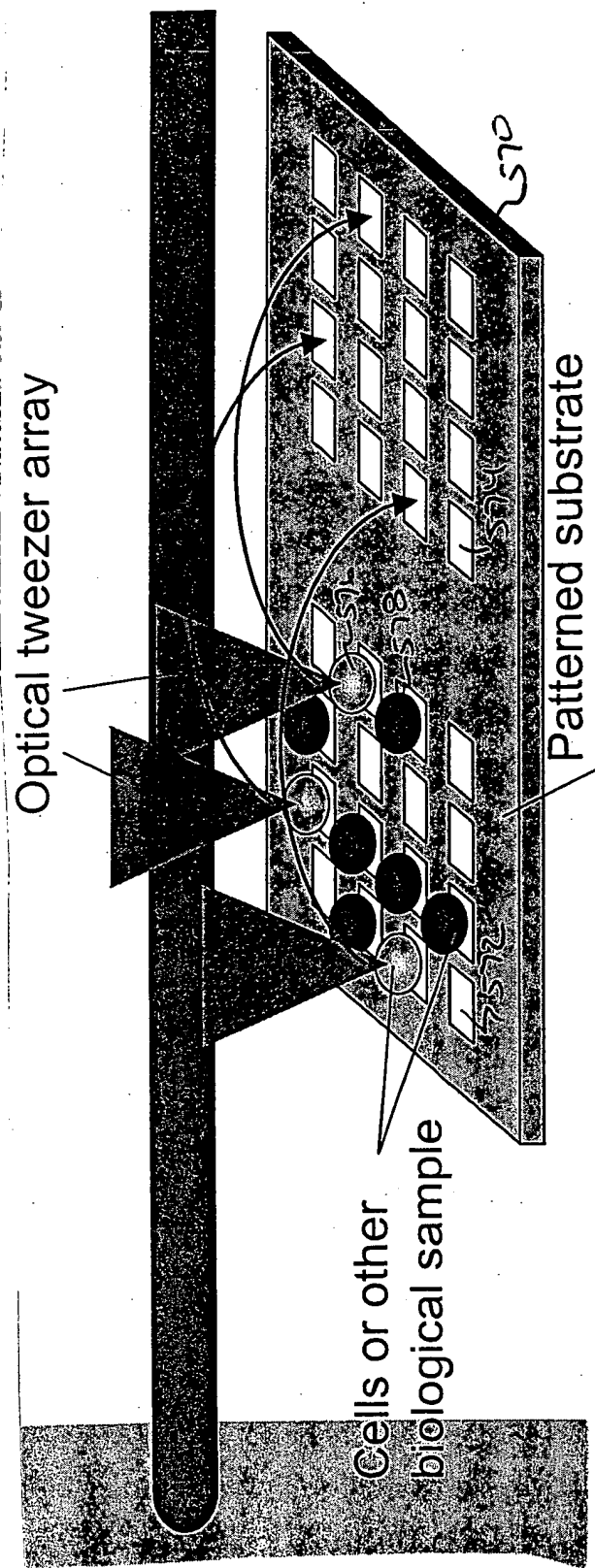


Fig. 30

Hemoglobin-O₂ Absorption Spectrum

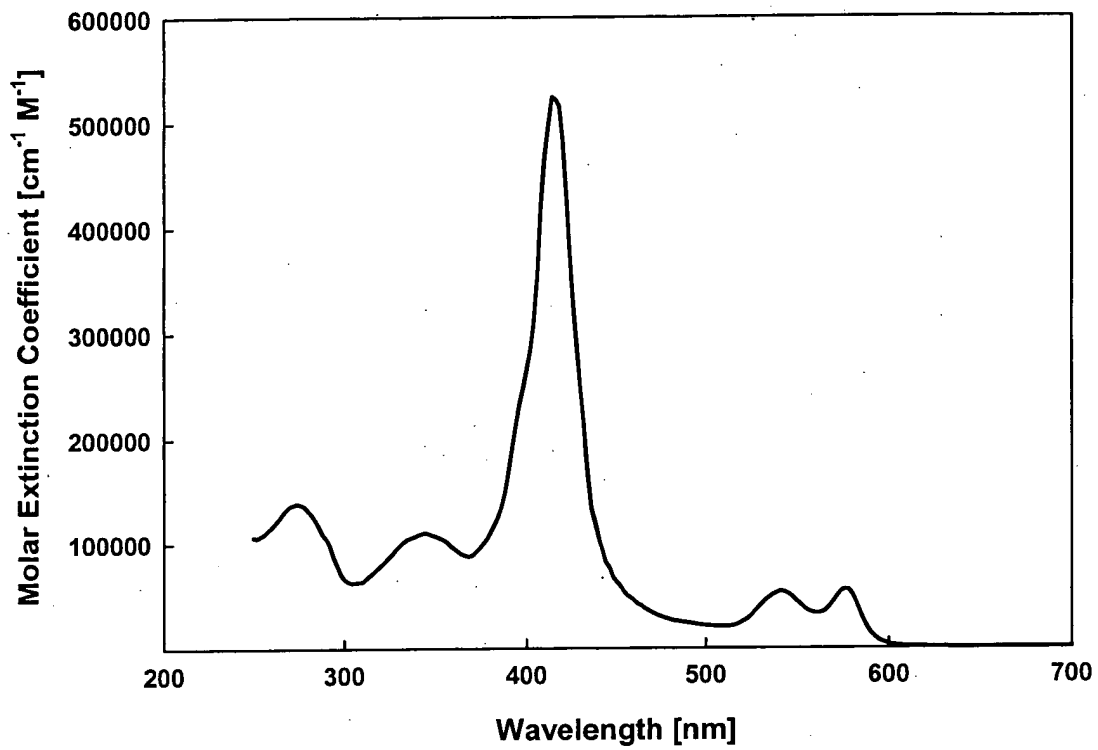


Fig. 31

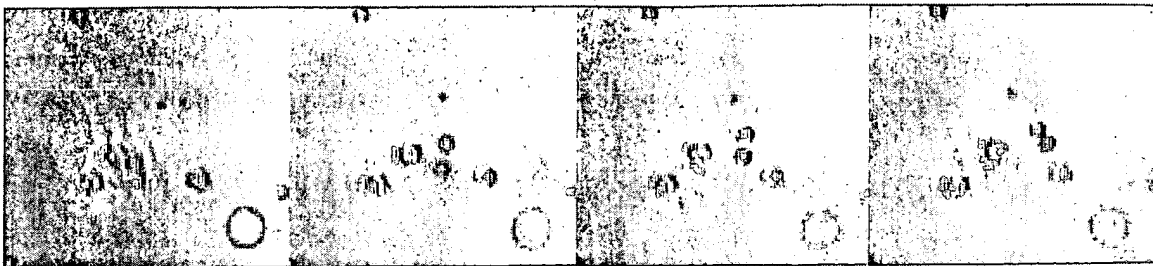


Fig. 32

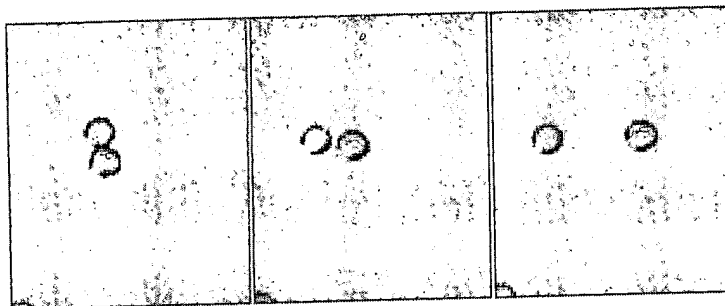
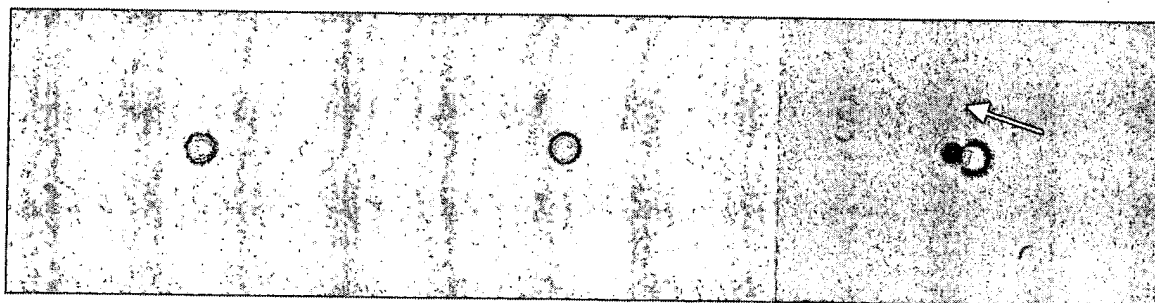


Fig. 33



Before

After

Difference

Fig. 34

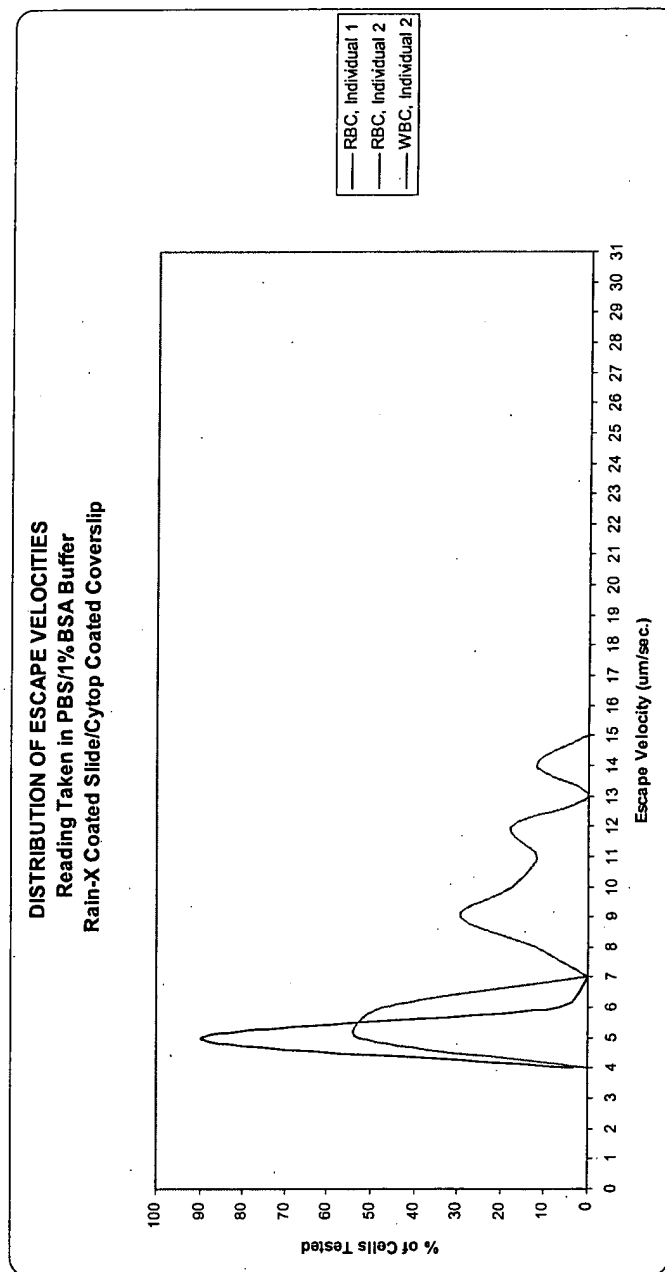


Fig. 35

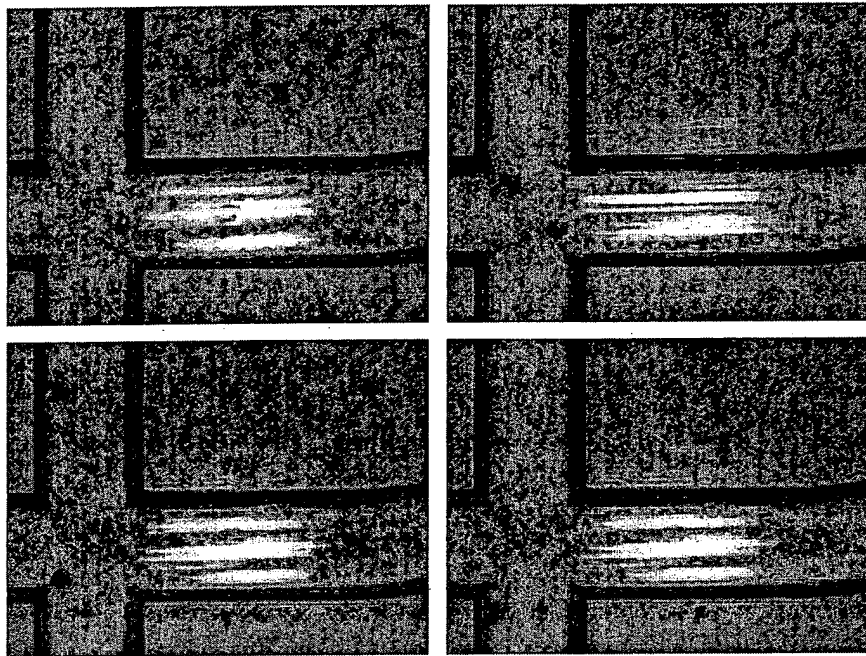


Fig. 36